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MPLS Module - Forwarding Table Package Description

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Contents

1. Forwarding Table Package

The forwarding table package contains modules that models MPLS forwarding scheme. The implemented modules are ForwardingInformation, NHLFE, FTN, ILM, tunnel_entry, and MPLSForwardingTable.

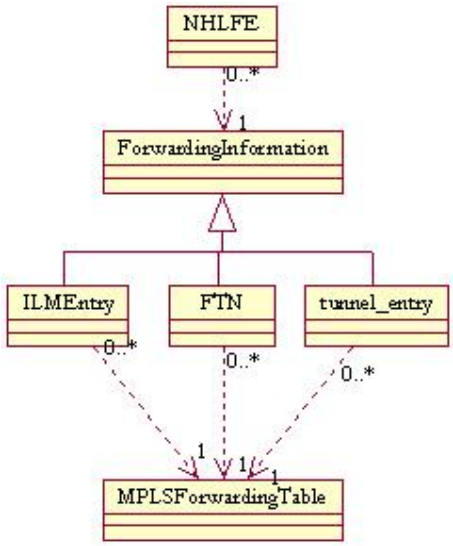


Figure 1 Forwarding Package Relationship Diagram

Figure 1 represents the relation of forwarding package. ForwardingInformation is super class of three basic entry; ILM, FTN, and tunnel_entry. It also has a interface to manipulate the NHLFE.

2. Forwarding Table

Forwarding Table modules are modeling the Forwarding entry of MPLS forwarding scheme. This class contains the search, query interface to find out the each basic entry. It also has the switch functions to switch over backup LSP when fault occurs. Whenever LSP is established each LSR stores the forwarding entry according to their LSR type. MPLSForwardingTable is main class that manages the each forwarding table in LSR. This class contains the three different ForwardingInformations to store FTN, ILM and tunnel_etnry.

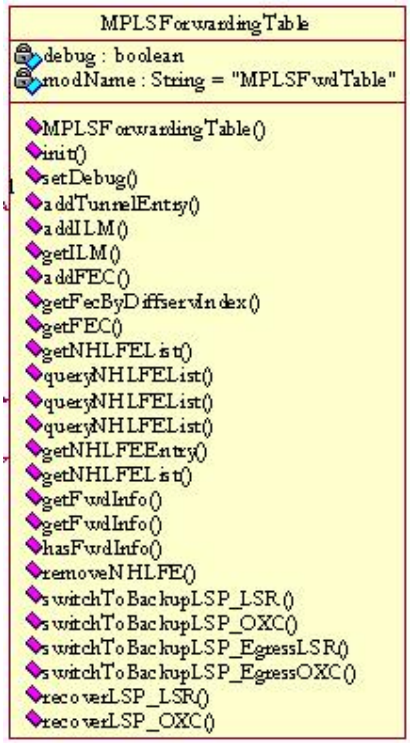
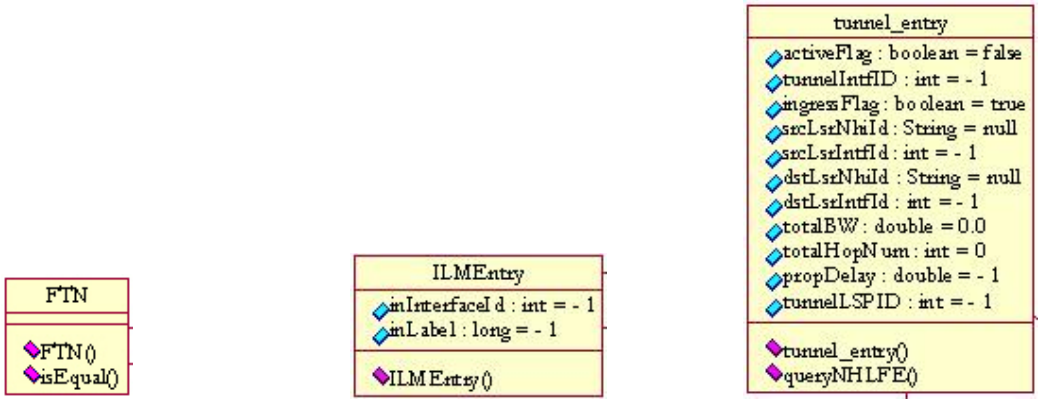


Figure 2 MPLS Forwarding Table class

3. Basic Forwarding Entries and Forwarding Information class

The basic forwarding entries are FTN, ILMEntry NHLFE and tunnel_entry. FTN(FEC-to-NHLFE) is used to map each FEC to a set of NHLFE at ingress LSR. ILM(Incoming Label Map) is used to map each incoming label to a set of NHLFEs. Tunnel_entry is used to map the tunnel information into a set of NHLFEs . All three entries are inherited from Forwarding Information class that has functions to add, remove and modify the NHLFEs.

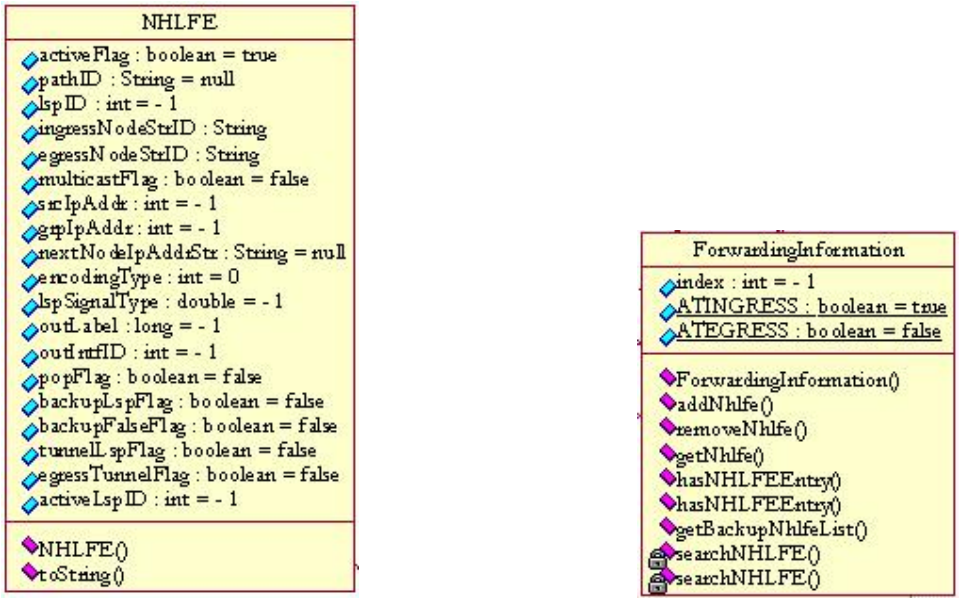


(a) FTN (b) ILM Entry (c) tunnel_entry

Figure 3 Basic forwarding Entries

ForwardingInformation class is inherited from Vector to store the NHLFEs. It support to store, retrieve, and search function. The three inherited classes, FTN, ILM, tunnel_entry have their own parameters. FTN(FEC-To-NHLFE) is used to store the mapping relationship between FEC and NHLFE. It has FEC information such as source/destination address, source/destination port, TOS, and Protocol Number. This information will be used to classify each packet, search the NHLFEs. If there is matched one, the label is attached to the packet.

ILM(Incoming Label Map) is used at Core LSR to replace the incoming label with outgoing label. To search the matched NHLFE it store the Incoming label information. Tunnel_entry is used to map the Tunnel LSP with NHLFE.



(a) NHLFE class (b) Forwardinginformation class

Figure 4 NHLFE and ForwardingInformation class

Figure 4 shows the NHLFE and Forwarding Information class.